

## SECTION 1 - 4

## SECTION SUMMARY

## Earth's Moon

Guide for  
Reading

- ◆ What features of the moon can be seen with a telescope?
- ◆ How did the Apollo landings help scientists learn about the moon?

The moon is 3,476 kilometers in diameter—about one fourth the diameter of Earth. However, the moon has only one-eightieth as much mass as Earth. Scientists do not know for sure how the moon was formed. The theory that best fits the evidence is called the collision theory. It says that about 4.5 billion years ago, an object about as large as Mars hit Earth. Material from the object and from Earth's outer layers was thrown into orbit around Earth. Eventually, that material formed the moon.

For thousands of years, people could see shapes on the surface of the moon, but didn't know what caused them. About 400 years ago, Galileo made his own **telescope** by putting two lenses in a wooden tube. He looked through his telescope at the moon, and he saw the moon in more detail than anyone had ever seen before. **Features on the moon's surface include craters, highlands, and maria.**

Galileo saw that much of the moon's surface is covered with round pits called **craters**. Galileo also saw dark, flat parts of the moon's surface which he called **maria**, the Latin word for "seas." The singular of maria is *mare*. Scientists now know that the maria are areas that were flooded by molten rock billions of years ago. The moon's craters were formed by impacts by rocks from space.

In 1961, President John F. Kennedy announced that America would send people to the moon. *Surveyor* was the first spacecraft to land on the moon. *Lunar Orbiters* then photographed the moon's surface, so scientists could find a safe spot for humans to land. On July 20, 1969, the *Eagle*, the Lunar Module of *Apollo 11*, carrying Neil Armstrong and Buzz Aldrin, landed in a flat region called the Sea of Tranquillity. Neil Armstrong was the first person to walk on the moon. Later, other *Apollo* missions also went to the moon.

Much of what scientists have learned about the moon came from detailed study of the moon rocks gathered by astronauts. Almost all the rocks were formed from the cooling of molten material. Some rocks showed they had been broken apart by impacts and then fused back together. Seismometers placed on the moon by the astronauts detected extremely weak moonquakes. Another instrument measured the amount of heat flowing from the moon's interior. It showed that the moon has cooled almost completely since it was formed. The far side of the moon is rougher than the near side and has few maria.

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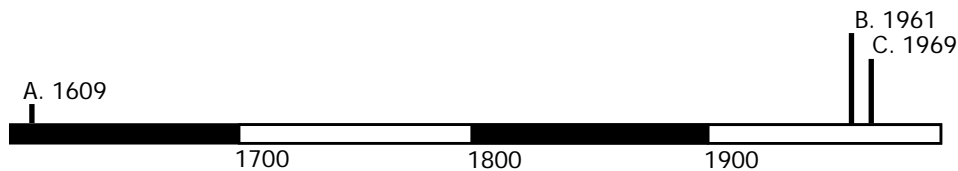
## REVIEW AND REINFORCE

# Earth's Moon

### ◆ Understanding Main Ideas

*Answer the following questions on the back of this page or on a separate sheet of paper.*

1. How are the size and mass of the moon different from that of the Earth?
2. How do astronomers think the moon was formed?
3. Who was the first person to observe the moon through a telescope? What features of the moon did he identify?
4. Identify the major events in moon exploration marked on the time line below.



5. What new information about the moon did scientists learn from the Apollo mission?

### ◆ Building Vocabulary

*Answer the following questions in the space provided.*

6. How did Galileo make a telescope?

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7. What are moon craters? How were they formed?

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8. What are maria? How were they formed?

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